

UNITED STATES PATENT APPLICATION

of

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for

METHODS AND SYSTEMS FOR USER ACTIVATED AUTOMATED SEARCHING

BACKGROUND OF THE INVENTION

1. The Field of the Invention

[01] The present invention relates to computer related searches and dynamic links. More specifically, the present invention relates to performing user defined searches and to creating user defined links from existing text.

2. Prior State of the Art

[02] The primary problem addressed by this invention relates to how searches are currently performed on the Internet, an Intranet or other computer network. For example, when a user desires to perform a search while working within an application such as a word processor, the user must first exit the word processor and initiate a Internet browser. Once the Internet browser is opened, the user first opens a particular search engine or other database. Next, the user inputs the search terms into the selected search engine. The search engine then returns the search results to the user. Finally, the user must extract the information returned in the search result and input that information into the current application.

[03] This can become a tedious and very unproductive process as the user spends time going between an application and a browser in order to perform various searches. In addition, the user often must perform the additional step of accessing the particular web site which may be returned in the search results. This additional step extends the process of searching the Internet for information or other data. What is needed are systems and methods for simplifying this process by allowing a user to search the Internet or other network from within an application more quickly and more easily.

SUMMARY

[04] The present invention provides systems and methods for automating a search over a network such as the Internet. A user selects data such as text from within an application. The selected data is activated and a search is performed without the user having to leave the application. The search is performed while the user is continuing within the application. When the search is complete, the search results are made available to the user within the application from which the search was initiated. In one embodiment, the data is pre-searched and the results are cached such that the results are already available should the user desire. The present invention is particularly suited to integration with an operating system such that the methods of the present invention are thereby available to all applications. Alternatively, the present invention can be specific to a particular application.

BRIEF DESCRIPTION OF THE DRAWINGS

[05] In order that the manner in which the above-recited and other advantages and features of the invention are obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Figure 1 illustrates an example system that provides an exemplary operating environment for the present invention; and

Figure 2 is an exemplary flowchart illustrating a preferred method of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[06] One embodiment of the present invention relates to allowing a user to perform searches on the Internet without having to leave the particular application within which the user is operating. A preferred method is to allow the user to dynamically create a hyperlink or a link within the application. Once this link is created, the present invention provides for selecting search terms, executing the search request and returning the results to the user without the user having to leave the context of the application. For example, if the user is operating within a word processing program and desires to perform a search relating to some of the words within the document that is being created, the first step that the user must perform is to select the words or the text that correspond to the search terms. The creation of the link, in one embodiment, is an inherent part of the selection of text. In other embodiments, no link is created and the search terms are simply executed. The selection of this text can be done by methods currently known in the art such as highlighting the text with the mouse or keyboard commands.

[07] Once the text has been selected, the user activates the selected text, which is an example of causing the search to be initiated. Frequently this can be done using a drop down menu, a right click of a mouse, a keyboard command, or a voice command or other method. A search is then performed based on the terms that have been selected. In one embodiment, after the text has been selected and activated, the search is performed in the background and the user may continue to operate within the application. Once the search has been performed, the search results are returned to the user. In some instances, those results can be input directly into the word processing application or other application, or the user has the option of previewing the results or viewing the results. The user can also store the results to a hard drive or other storage medium for later review. The present invention

1 also has the ability to take into account the context of the document that is being created by
2 the user. For example, the present invention may examine the sentence that contains the
3 selected word to focus the search terms that have been selected.

4 [08] While the present invention has been described herein with regards to word
5 processing applications, the presentation may also be used in other situations. The present
6 invention may be used to search documents that are saved or files that are saved in other
7 locations. For instance, a user may designate one or more files that are stored on a network
8 storage medium to serve as the search parameters. Alternatively, a user may initiate a search
9 on a computer network for all files that contain particular words and then cause the present
10 invention to search the Internet for information relating to those terms that have been
11 identified by a user. The present invention may be used with text recognition applications,
12 database applications, spreadsheet applications, and the like.

13 [09] The user may designate which search engine or Internet site is to be used for the
14 search. Alternatively, a user may designate that the search be performed on more than one
15 search engine or that a metasearch engine be used. In other words, the present invention is
16 highly configurable by the user. The user can specify which terms are to be searched. The
17 user is also able to specify how the search is to be performed, whether it be a context based
18 search or strictly limited to the terms or words that have been selected by the user. The user
19 is able to indicate how the search is to be performed and where the search is to be
20 performed. The user is also able to indicate how many results are to be returned. More
21 simply, the user is able to configure, in a variety of ways, how the present invention is to be
22 utilized. User preferences may be pre-set, but the present invention has the ability to learn a
23 user's preferences.

1 [010] The present invention also has a look-ahead feature. This look-ahead feature allows
2 the present invention to search for terms that exist in a document, for example, and perform
3 a search before the user actually indicates that a search is to be performed on those terms.
4 For instance, when a brief is written, various cases are cited. When the present invention is
5 able to detect a case citation, the search is automatically performed and the search results of
6 that case citation may be provided through use of the present invention. This feature is
7 particularly useful in a variety of situations including but not limited to: attorney's writing
8 legal documents; doctors writing medical histories; accountants performing numerical
9 analysis; journalists writing articles; and academicians researching projects.

10 [011] The present invention is not limited, however, to searching for text. The present
11 invention is capable of searching for image files, sound files, MPEG files, or other type of
12 files that may exist and contain information that is accessible over the Internet or other
13 networks. In one embodiment, these types of searches are performed using the metadata
14 that accompanies these types of files. For example, graphic files typically have metadata
15 that describes what the image is and these terms are able to be searched.

16 [012] The present invention extends to both methods and systems for automating Internet
17 searches. The embodiments of the present invention may comprise a special purpose or
18 general purpose computer including various computer hardware, as discussed in greater
19 detail below.

20 [013] Embodiments within the scope of the present invention also include computer-
21 readable media for carrying or having computer-executable instructions or data structures
22 stored thereon. Such computer-readable media can be any available media which can be
23 accessed by a general purpose or special purpose computer. By way of example, and not
24 limitation, such computer-readable media can comprise RAM, ROM, EEPROM, CD-ROM

1 or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any
2 other medium which can be used to carry or store desired program code means in the form
3 of computer-executable instructions or data structures and which can be accessed by a
4 general purpose or special purpose computer. When information is transferred or provided
5 over a network or another communications connection (either hardwired, wireless, or a
6 combination of hardwired or wireless) to a computer, the computer properly views the
7 connection as a computer-readable medium. Thus, any such a connection is properly termed
8 a computer-readable medium. Combinations of the above should also be included within
9 the scope of computer-readable media. Computer-executable instructions comprise, for
10 example, instructions and data which cause a general purpose computer, special purpose
11 computer, or special purpose processing device to perform a certain function or group of
12 functions.

13 [014] Figure 1 and the following discussion are intended to provide a brief, general
14 description of a suitable computing environment in which the invention may be
15 implemented. Although not required, the invention will be described in the general context
16 of computer-executable instructions, such as program modules, being executed by
17 computers in network environments. Generally, program modules include routines,
18 programs, objects, components, data structures, etc. that perform particular tasks or
19 implement particular abstract data types. Computer-executable instructions, associated data
20 structures, and program modules represent examples of the program code means for
21 executing steps of the methods disclosed herein. The particular sequence of such executable
22 instructions or associated data structures represent examples of corresponding acts for
23 implementing the functions described in such steps.

1 [015] Those skilled in the art will appreciate that the invention may be practiced in
2 network computing environments with many types of computer system configurations,
3 including personal computers, hand-held devices, multi-processor systems, microprocessor-
4 based or programmable consumer electronics, network PCs, minicomputers, mainframe
5 computers, and the like. The invention may also be practiced in distributed computing
6 environments where tasks are performed by local and remote processing devices that are
7 linked (either by hardwired links, wireless links, or by a combination of hardwired or
8 wireless links) through a communications network. In a distributed computing environment,
9 program modules may be located in both local and remote memory storage devices.

10 [016] With reference to Figure 1, an exemplary system for implementing the invention
11 includes a general purpose computing device in the form of a conventional computer 20,
12 including a processing unit 21, a system memory 22, and a system bus 23 that couples
13 various system components including the system memory 22 to the processing unit 21. The
14 system bus 23 may be any of several types of bus structures including a memory bus or
15 memory controller, a peripheral bus, and a local bus using any of a variety of bus
16 architectures. The system memory includes read only memory (ROM) 24 and random
17 access memory (RAM) 25. A basic input/output system (BIOS) 26, containing the basic
18 routines that help transfer information between elements within the computer 20, such as
19 during start-up, may be stored in ROM 24.

20 [017] The computer 20 may also include a magnetic hard disk drive 27 for reading from
21 and writing to a magnetic hard disk 39, a magnetic disk drive 28 for reading from or writing
22 to a removable magnetic disk 29, and an optical disk drive 30 for reading from or writing to
23 removable optical disk 31 such as a CD-ROM or other optical media. The magnetic hard
24 disk drive 27, magnetic disk drive 28, and optical disk drive 30 are connected to the system

1 bus 23 by a hard disk drive interface 32, a magnetic disk drive-interface 33, and an optical
2 drive interface 34, respectively. The drives and their associated computer-readable media
3 provide nonvolatile storage of computer-executable instructions, data structures, program
4 modules and other data for the computer 20. Although the exemplary environment
5 described herein employs a magnetic hard disk 39, a removable magnetic disk 29 and a
6 removable optical disk 31, other types of computer readable media for storing data can be
7 used, including magnetic cassettes, flash memory cards, digital video disks, Bernoulli
8 cartridges, RAMs, ROMs, and the like.

9 **[018]** Program code means comprising one or more program modules may be stored on the
10 hard disk 39, magnetic disk 29, optical disk 31, ROM 24 or RAM 25, including an operating
11 system 35, one or more application programs 36, other program modules 37, and program
12 data 38. A user may enter commands and information into the computer 20 through
13 keyboard 40, pointing device 42, or other input devices (not shown), such as a microphone,
14 joy stick, game pad, satellite dish, scanner, or the like. These and other input devices are
15 often connected to the processing unit 21 through a serial port interface 46 coupled to
16 system bus 23. Alternatively, the input devices may be connected by other interfaces, such
17 as a parallel port, a game port or a universal serial bus (USB). A monitor 47 or another
18 display device is also connected to system bus 23 via an interface, such as video adapter 48.
19 In addition to the monitor, personal computers typically include other peripheral output
20 devices (not shown), such as speakers and printers.

21 **[019]** The computer 20 may operate in a networked environment using logical connections
22 to one or more remote computers, such as remote computers 49a and 49b. Remote
23 computers 49a and 49b may each be another personal computer, a server, a router, a network
24 PC, a peer device or other common network node, and typically include many or all of the

1 elements described above relative to the computer 20, although only memory storage
2 devices 50a and 50b and their associated application programs 36a and 36b have been
3 illustrated in Figure 1. The logical connections depicted in Figure 1 include a local area
4 network (LAN) 51 and a wide area network (WAN) 52 that are presented here by way of
5 example and not limitation. Such networking environments are commonplace in office-
6 wide or enterprise-wide computer networks, intranets and the Internet.

7 [020] When used in a LAN networking environment, the computer 20 is connected to the
8 local network 51 through a network interface or adapter 53. When used in a WAN
9 networking environment, the computer 20 may include a modem 54, a wireless link, or other
10 means for establishing communications over the wide area network 52, such as the Internet.
11 The modem 54, which may be internal or external, is connected to the system bus 23 via the
12 serial port interface 46. In a networked environment, program modules depicted relative to
13 the computer 20, or portions thereof, may be stored in the remote memory storage device. It
14 will be appreciated that the network connections shown are exemplary and other means of
15 establishing communications over wide area network 52 may be used.

16 [021] Referring to Figure 2, which is an exemplary flowchart of a preferred embodiment of
17 the present invention. In step 100 the user selects text which may be present in a document
18 being created in a word processor. The methods and manners in which text may be selected
19 include using a mouse or other device to select text. Text selection may be automatic,
20 programmed or learned. The present invention is not limited to text however, but images or
21 other data types may also be selected as described above. In step 102, the text or data is
22 activated. Activating text or data refers to providing a drop down menu to a user to select
23 the search engine or causing the computer to initiate the search without having the user
24 select a search engine. Activating text or data also refers to creating or providing a link that

1 may be activated or clicked on by the user. In one embodiment, the selection of text in step
2 100 and the activation of text in step 102 comprise creating a link in a user application or
3 user document. In one embodiment, the created link contains the search terms selected by a
4 user. When the link is clicked or activated, a search is performed using the terms in the link.
5 The surrounding text or data may be used as context to focus the search in another
6 embodiment.

7 [022] In another embodiment of the present invention, it is understood that it is possible to
8 perform the search based on the link that has been created and store the results for future
9 access by a user. This enables the user to have instant access to the search results without
10 having to perform the search again at a later date. The results of the search may be simply
11 stored on the users local storage medium such as a local hard drive or RAM. In step 104,
12 after the text has been selected and activated, the search is typically performed as indicated
13 by the configuration settings or by the user. The search may be performed on an Internet
14 search engine or over the Internet or through various other types of databases or networks,
15 including but not limited to, intranets and extranets.

16 [023] In step 106, the results of the search are returned to the user and can be displayed in a
17 variety of manners. In other words, a user or the application is capable of manipulating the
18 results. Manipulating the search results includes, but is not limited to, copying at least a
19 portion of the search results, pasting at least a portion of the search results, deleting at least a
20 portion the search results, saving at least a portion of the results, using the search results in
21 accordance with pre-defined rules or procedures, and the like. For example, the results of
22 the search may be displayed when the user mouses over the text that was previously
23 selected. When that mouse crosses over the activated text the results can be displayed in a
24 pop up window to a user and the user then has the ability to select which of the search

1 results the user desires to place in the document or to read. In another embodiment, the
2 present invention may simply place the first result of the search into the document without
3 further user input. For example, if the search result is a court case citation, then the citation
4 may be placed within the text. The user then has the ability to edit this result as if it were
5 text that the user had created. These methods are intended to be exemplary descriptions of
6 how search results can be returned to a user and used in a document or other application.
7 Additionally, more than one portion of the text or other data may be activated. Also, linked
8 and unlinked text and data displayed by a browser are included within preferred
9 embodiments of the present invention.

10 [024] Essentially, hyperlinks or links are being created where hyperlinks or links do not
11 already exist. Links are dynamically created based on the data that is selected as well as the
12 context of the selected data. For example, the search engine that is used to perform the
13 search for a selected word (sentence, paragraph, image) may be determined based on the
14 context of the word. If the word "aspirin" is selected in a sentence (page, etc.) that also has
15 the word "interaction" in it, a medical drug interaction database may be searched instead of
16 a generic search engine.

17 [025] Basically, a user indicates what text is to be used in a search. This may be done in a
18 number of ways depending on the application being executed by the user. In many
19 instances, both the operating system and a particular application are involved in the selection
20 of text or other data. Depending on the application, for example, a user may highlight the
21 text (with mouse, keyboard, or some other way); hover the cursor over the text; and
22 wherever the cursor is in some document (like while doing word processing).

23 [026] Once the text to search for is indicated in some fashion, the user will trigger the
24 search or activate the text. Again, this can happen in several ways, such as click the mouse

1 (right, left, middle, etc.); key sequence (F12, etc.); menu item; main application menu;
2 context menu (which usually comes up when the user right clicks in an application); toolbar
3 button; voice command, dedicated keyboard or mouse button, and the like.

4 [027] When the search action is initiated, the search may occur immediately based on the
5 selected text and bring up the results in a web browser, or it may bring up a user interface to
6 prompt the user for more information to fine tune the search actions being performed. For
7 example, the user may: highlight a word; right click to bring up the context menu; or select
8 the menu item. Once this action is performed, a dialog window is displayed asking the user
9 if they want to search based on the word, the sentence the word is contained in, or the
10 paragraph the word is contained in. The user will also be presented with a list of search
11 engines they want to use to perform the search. The list of engines to use may come from a
12 list the user configured ahead of time, a global list, or a list based on the selected terms. The
13 search may be based on the context of the selected terms. For example, if the selected text
14 or other data is a recognized medical term, then a list of medical related sites are displayed.
15 If the search terms are the name of a car, then various car related web sites may be searched.

16 [028] The search may be performed based on what other users with a similar profile to the
17 current user may have used for similar terms in the past. For example, using the term
18 "metal," a search for users in the manufacturing industry may be performed in a
19 metallurgical database, while other a search for other users may be performed in a music
20 database. The determination of which search engines will be displayed or used may be
21 driven by the term and a user. Often a user ID may also be utilized in determining how the
22 search is to be performed. One embodiment of the present invention is capable of
23 determining how the search is to be performed while other embodiments leave the
24 determination to other applications on the user's computer or on a remote computer.

1 [029] Once the search engine(s) are determined or selected, the search is passed into the
2 various search engines through their standard HTML or XHTML form based method of
3 searching. In addition, for search engines that may not be HTML or XHTML based, other
4 methods of triggering the search can be used. For example, searching for the term may
5 occur in a company's glossary that resides in some database.

6 [030] The results of the search can be displayed in the user's web browser, in an embedded
7 browser window in the triggering application, or in some other custom interface that is used
8 for displaying that search engine's results.

9 [031] The present invention will interface with existing applications or operating systems
10 via that application's API (application programming interface) to provide the user activated
11 search functionality. A new set of context menu items may be added to each application.
12 The fewer actions the user has to take to select the search term, and perform the search the
13 better. This process depends on both the application and the application's application
14 programming interfaces (APIs). One application may involve simply hovering the mouse
15 point over a term and pressing the middle mouse button, other applications may involve
16 highlighting the search terms and then right clicking to bring up a context menu such that
17 the appropriate menu item may be selected.

18 [032] Ideally, the present invention would be integrated with an operating system to
19 provide this capability to every application on the system (similar to how most applications
20 supports cut/copy/paste). But, the present invention may also be application specific.

21 [033] Some of the applications that obviously fit this functionality are web browsers, e-
22 mail clients, word processors, spreadsheets, PDF viewers and the like, chat clients, voice
23 recognition systems, operating systems and the like. Note that an operating system is also
24 considered to be an application.

1 [034] Searching the worldwide web need not be limited to HTML links pre-defined and
2 embedded in web pages. Instead, any text can be immediately linked to a search engine or
3 engines and, effectively, become a hypertext link through the present invention. The
4 searchable text not only includes plain text in web pages but also encompasses text in any
5 word processing program, spreadsheet, office suite or any other type of text.

6 [035] The text to be searched can either be selected with a left double-click in most
7 applications, or by dragging an inserted cursor (in HTML), or by shift/arrows in some
8 programs. Depending on the language, structure, and API of the document containing the
9 desired text, the text could be selected for searching by just hovering over the desired search
10 terms.

11 [036] For example, once the text is selected, a single right click brings up either a drop
12 down menu listing search options or, depending upon the API for the underlying page, a
13 detailed GUI. Either way, the options available for searching are configurable. For
14 example, the default search could be on the word with a particular search engine over the
15 entire web. Options could modify the default (e.g., search the entire sentence in context,
16 search for graphic files, use a metasearch engine, search only news/information sites, search
17 only an intra- or extranet) or allow complete customization on a per search basis.

18 [037] The program is also intelligent in many ways. First, it can read the terms to be
19 searched in the context of either the surrounding text or of the URL from whence it came.
20 For example, if "cardinal" were selected as the text to be searched, the intelligence would
21 provide different search results if the text were on a sports page than it would if the text
22 came from a bird-watching page. A second type of intelligence will be learning the user's
23 search preferences (e.g., shopping v. information v. entertainment, etc.). This intelligence
24

1 can be both programmed in at the initial log-on or learned from repeated uses of the present
2 invention.

3 [038] A third type of intelligence would be a "look-ahead" feature. On a HTML page or in
4 another application the program would identify non-hypertext terms likely to be searched
5 (e.g., proper nouns or, depending on the users learned or entered preferences, terms of art in
6 a particular field or fields), search the terms, and cache the results. The results of the search
7 could be set to appear, for example as a pop-up when the cursor hovered over the text.

8 [039] Specialized uses include a lawyer working on a brief typing a case, selecting the text
9 and immediately being transported to a legal search engine such a Lexis or Westlaw. With
10 the "look-ahead" feature operational and enabled the search results would already be
11 resident and thus the search would be instantaneous. A doctor reviewing a patient report
12 emailed by a colleague could instantly search medical journals and/or drug manufacturers
13 for the latest information on a condition, procedure, or medication. On an intranet, a
14 manager doing personnel evaluations could access all information about a particular
15 employee without leaving the word-processing screen. An author writing or editing a story
16 or book could search specialized databases for background information or details.

17 [040] The present invention is not, as previously described, limited to text. The present
18 invention can be used in conjunction with scanned data, text recognition devices and files,
19 image files, MPEG files, voice commands and other user input and available data. The data
20 may be selected, activated and searched. The user is relieved of leaving an application to
21 externally and manually execute a search. The results of the search can be stored,
22 incorporated into the specific application, viewed, pre-viewed or otherwise handled as
23 specified by a user.
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1 [041] The present invention may be embodied in other specific forms without departing
2 from its spirit or essential characteristics. The described embodiments are to be considered
3 in all respects only as illustrative and not restrictive. The scope of the invention is,
4 therefore, indicated by the appended claims rather than by the foregoing description. All
5 changes which come within the meaning and range of equivalency of the claims are to be
6 embraced within their scope.